SECTION I—CLAIMS

Amendment to the Claims:

This listing of the claims will replace all prior versions and listings of claims in the application. Claims 30, 33-35, 38-40, and 43-44 are amended herein. Claims 1-29 remain canceled herein without prejudice. No new claims are added.

Listing of Claims:

1-29. (Canceled)

30. (Currently Amended) A method comprising:

receiving content for transmission from a plurality of more than two transmit antennae, wherein the received content is a vector of input symbols (**s**) of size *Nc* x 1, wherein *Nc* is the number of subcarriers of the multicarrier wireless communication channel; and

generating a rate-one, space-frequency code matrix from the received content for transmission via the plurality of more than two transmit antennae by dividing the vector of input symbols into a number *G* of groups to generate subgroups and multiplying at least a subset of the subgroups by a constellation rotation precoder to produce a number *G* of pre-coded vectors (v_g), wherein successive symbols from the same group transmitted from the same antenna are at a frequency distance that is multiples of ~~*NG*~~<u>*MG*</u> subcarrier spacings<u>, wherein *M* represents a number of transmit antennae</u>.

31. (Previously Presented) A method according to claim 30, further comprising:

dividing each of the pre-coded vectors into a number of *LM* x *1* subvectors; and

creating an *M* x *M* diagonal matrix $D_{\mathbf{s}_g,k} = diag\{\Theta^T_{M\times(k-1)+1}\mathbf{s}_g,\cdots,\Theta^T_{M\times k}\mathbf{s}_g\}$, where *k*=*1*...*L* from

the subvectors.

32. (Previously Presented) A method according to claim 31, further comprising:

interleaving the *L* submatrices from the *G* groups to generate an *M* x *Nc* space-frequency matrix.

33. (Currently amended) A method according to claim 32, wherein the space-frequency matrix provides *M N L* channel diversity, while preserving a code rate of 1 for any number of <u>the</u> transmit <u>antennae</u> ~~antenna(s)~~ *M,* receive antenna(s) *N* and channel tap(s) *L*.

34. (Currently amended) A method according to claim 30, wherein the space-frequency matrix provides *M N L* channel diversity, while preserving a code rate of 1 for any number of <u>the</u> transmit <u>antennae</u> ~~antenna(s)~~ *M,* receive antenna(s) *N* and channel tap(s) *L*.

35. (Currently Amended) An apparatus comprising:

a diversity agent to receive content for transmission via a multicarrier wireless communication channel, wherein the received content is a vector of input symbols (**s**) of size *Nc* x 1, wherein *Nc* is the number of subcarriers of the multicarrier wireless communication channel, and to generate a rate-one, space-frequency code matrix from the received content for transmission on the multicarrier wireless communication channel from a plurality of more than two transmit antennae by dividing the vector of input symbols into a number *G* of groups to generate subgroups and multiplying at least a subset of the subgroups by a constellation rotation precoder to produce a number *G* of pre-coded vectors (v_g), wherein successive symbols from the same group transmitted from the same antenna are at a frequency distance that is multiples of ~~*NG*~~<u>*MG*</u> subcarrier spacings<u>, wherein *M* represents a number of transmit antennae</u>.

36. (Previously Presented) An apparatus according to claim 35, the diversity agent further comprising:

a space-frequency encoding element, responsive to the pre-coder element, to divide each of the pre-coded vectors into a number of LM x 1 subvectors, and to create an M x M diagonal matrix $D_{\mathbf{s}_g,k} = diag\{\Theta^T_{M\times(k-1)+1}\mathbf{s}_g, \cdots, \Theta^T_{M\times k}\mathbf{s}_g\}$, where $k=1...L$ from the subvectors.

37. (Previously Presented) An apparatus according to claim 36, wherein the space-frequency encoding element interleaves the L submatrices from the G groups to generate an M x Nc space-frequency matrix.

38. (Currently amended) An apparatus according to claim 37, wherein the space-frequency matrix provides $M\,N\,L$ channel diversity, while preserving a code rate of 1 for any number of the transmit antennae ~~antenna(s)~~ M, receive antenna(s) N and channel tap(s) L.

39. (Currently amended) An apparatus according to claim 35, wherein the space-frequency matrix provides $M\,N\,L$ channel diversity, while preserving a code rate of 1 for any number of the transmit antennae ~~antenna(s)~~ M, receive antenna(s) N and channel tap(s) L.

40. (Currently Amended) A system comprising:

a number M of omnidirectional antennas, wherein M comprises more than two omnidirectional antennas; and

a diversity agent, to receive content for transmission via a multicarrier wireless communication channel, wherein the received content is a vector of input symbols (**s**) of size Nc x 1, wherein Nc is the number of subcarriers of the multicarrier wireless communication channel, and to generate a rate-one, space-frequency code matrix from the received content for transmission on the multicarrier wireless communication channel from at least a subset of the M omnidirectional antennas by dividing the vector of input symbols into a number G of groups to generate subgroups and multiplying at least a subset of the subgroups by a constellation rotation precoder to produce a number G of pre-coded

vectors (v_g), wherein successive symbols from the same group transmitted from the same antenna are at a frequency distance that is multiples of ~~NG~~ <u>*MG*</u> subcarrier spacings.

41. (Previously Presented) A system according to claim 40, the diversity agent further comprising:

a space-frequency encoding element, responsive to the pre-coder element, to divide each of the pre-coded vectors into a number of *LM* x *1* subvectors, and to create an *M* x *M* diagonal matrix $D_{\mathbf{s}_g,k} = diag\{\Theta^T_{M\times(k-1)+1}\mathbf{s}_g, \cdots, \Theta^T_{M\times k}\mathbf{s}_g\}$, where *k=1...L* from the subvectors.

42. (Previously Presented) A system according to claim 41, wherein the space-frequency encoding element interleaves the *L* submatrices from the *G* groups to generate an *M* x *Nc* space-frequency matrix.

43. (Currently amended) A system according to claim 42, wherein the space-frequency matrix provides *M N L* channel diversity, while preserving a code rate of 1 for any number of <u>the omnidirectional antennas</u> ~~transmit antenna(s)~~ *M,* receive antenna(s) *N* and channel tap(s) *L*.

44. (Currently amended) A system according to claim 40, wherein the space-frequency matrix provides *M N L* channel diversity, while preserving a code rate of 1 for any number of <u>the omnidirectional antennas</u> ~~transmit antenna(s)~~ *M,* receive antenna(s) *N* and channel tap(s) *L*.